

# Coronis 21-inch



## Installation & User Manual

Supported displays: MFGD 2621, MFGD 3621

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# Preface

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### **Notice**

Although every attempt has been made to achieve technical accuracy in this document, we assume no responsibility for errors that may be found. Our goal is to provide you with the most accurate and usable documentation possible; if you discover errors, please let us know.

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### **FCC notice (display)**

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### **Canadian notice**

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

**Disposal Information**

The lamps inside the display contain mercury. Do not throw the display in the trash. Dispose of it as required by local ordinances or regulations.

## Safety Instructions

### General Recommendations

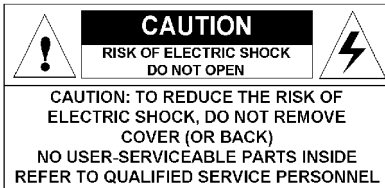
Read the safety and operating instructions before operating the display.

Retain safety and operating instructions for future reference.

Adhere to all warnings on the display and in the operating instructions manual.

Follow all instructions for operation and use.

### Electrical shock



### Type of protection (electrical):

Class I equipment

### Degree of safety (flammable anesthetic mixture):

Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

### Power connection

- Power requirements: The display must be powered using the 12 VDC power supply that is supplied with the display.
- The 12 VDC power supply must be powered by the AC mains voltage.
- Power cords:  
Power cord with CEE 7 plug: The colors of the mains lead are colored in accordance with the following



code: Green-and-yellow: Earth (safety earth), Blue: Neutral, Brown: Line

Power cord with ANSI 73.11 plug: The wires of the power cord are colored in accordance with the following code: Green/yellow: ground, White: neutral, Black: line (live)



- Do not overload wall outlets and extension cords as this may result in fire or electric shock.
- Mains lead protection (U.S.: Power cord): Power cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs and receptacles.

### **Water and moisture**

Never expose the display to rain or moisture.

Never use the display near water - e.g. near a bathtub, washbasin, swimming pool, kitchen sink, laundry tub or in a wet basement.

### **Ventilation**

Do not cover or block the ventilation openings in the cover of the set. When installing the display in a cupboard or another closed location, heed the necessary space between the set and the sides of the cupboard.

### **Installation**

Place the display on a flat, solid and stable surface that can bear the weight of at least 3 displays. If you use an unstable cart or stand, the display may fall, causing serious injury to a child or adult, and serious damage to the equipment.

More warnings in the Installation chapter.



### **Operating precautions: How to avoid image retention**

Continuous operation of the display with the same image may result in some image sticking on the LCD panel. Over 10 hours operation with the same image content is not recommended.

To decrease the risk of image sticking (image retention):

- Switch on DPMS on display and PC
- Activate a good screen saver

### **This apparatus conforms to:**

CE (LVD 73/23/EEC), IEC 60950-1, UL 60950-1,  
CAN/CSA C22.2 No. 60950-1 (c-UL), EN 60950-1 DEMKO,  
CCC GB4943-1995

### **National Scandinavian Deviations for Cl. 1.7.2 :**

Finland: "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

Norway: "Apparatet må tilkoples jordet stikkontakt"

Sweden: "Apparaten skall anslutas till jordat uttag"

## Explanation of symbols

### Symbols on the display and / or power supply

On the display or power supply, you may find the following symbols:



Indicates the display is approved according to the CE regulations



or



Indicates the display is approved according to the UL regulations



c

or



Indicates the display is approved according to the c-UL regulations



Indicates the display is approved according to the DEMKO regulations



Indicates the display is approved according to the CCC regulations



Indicates the USB connectors on the display



Indicates this apparatus must not be thrown in the trash but must be recycled, according to the European WEEE (Waste Electrical and Electronic Equipment) directive

### Symbols used throughout the manual:



Warning



Caution



Important notice or  
remark



Note



Hint, tip



Additional  
information

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# Introduction

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## Overview

Thank you for choosing Barco.

### Single display or complete system?

This manual describes installation and usage of a complete system. A system is a bundling of one or more displays and one or more display controllers (graphics boards).

However, if you have purchased the display only instead of a complete system, please refer to the chapters in this manual covering the display, and disregard the information about the display controller.

## BARCOMED CORONIS display controller overview

The BarcoMed Coronis display controller delivers a quality image with 1024 simultaneous shades of gray for medical viewing applications.

### Minimum system requirements

- Pentium II 266 MHz with 128 MB RAM (Pentium II 800MHz with 256 MB RAM for cineloops)



**Important:** Other hardware and software installed in the system may require more system memory for best performance.

- PCI 3.0 compliant slot (PCI version) or PCIe 1.1 compliant slot (PCIe version)
- Windows® XP Professional  
Windows® 2000 Professional  
Windows® 2003 Server  
Windows® XP Professional x64 Edition,  
Windows® 2003 Server x64 Edition

### Features of the BarcoMed Coronis display controller

- Portrait or landscape Mode
- Dual Head Configuration
- 10-bit in/10-bit out LUT
- 10-bit performance on LCD
- 1024 Simultaneous shades of gray
- Hardware cursor
- Displays VGA boot messages on CORONIS displays.
- 64-bit/66MHz Single slot PCI card (PCI version)<sup>1</sup>
- 64MB Video memory (PCI version)
- Single slot PCIe x8 card (PCIe version)<sup>2</sup>
- 128MB Video memory (PCIe version)

- 
1. May be installed in a 32-bit/33Mhz PCI slot but with reduced performance.
  2. May be installed in a PCIe x16 slot, however not all PC Bios's support x8 cards in the x16 slot. Check with your PC manufacturer.

## Supported resolutions for each head of the BARCOMED CORONIS display controller

### Coronis 2MP displays

- 1200 x 1600 @ 60 HZ (primary)
- 1600 x 1200 @ 60 HZ

### Coronis 3MP displays

- 1536 x 2048 @ 60 HZ (primary)
- 2048 x 1536 @ 60 Hz

### Coronis 5MP displays

- 2048 x 2560 @ 60 HZ (primary)
- 2560 x 2048 @ 60 Hz

For all BarcoMed Coronis display controllers

The following resolutions are also available on head 1 when the OS is booted in VGA mode.

- 640x480 @ Default refresh rate, 16 colors (4-bit color), grayscale
- 800x600 @ Default refresh rate, 256 colors (8-bit color), grayscale

## System Configuration Guidelines

Because of the low power consumption and low heat generation of the BarcoMed Coronis display controller, multiple controllers may be installed in adjacent PCI/PCIe slots or adjacent to other PCI/PCIe boards. Additionally there should be no need to modify either the PC's power supply and/or cooling system.

## Barco displays overview

### Barco displays

The MFGD 2621 is a 21-inch grayscale LCD display with a native resolution of 1600 x 1200.

The MFGD 3621 is a 21-inch grayscale LCD display with a native resolution of 2048 x 1536.

Their high-brightness, combined with image crispness and excellent viewing angle, makes them ideal for a multitude of medical applications and environments.

### I-Guard

I-GUARD® is Barco's patent-pending, built-in calibration device, continuously maintaining image quality. With I-GUARD®, QA checks no longer need to disturb normal radiology activities, as they can be performed while applications are running.

I-GUARD® allows radiologists or QA administrators to calibrate their viewing stations or adjust the panel's curve to DICOM standards without administrator intervention.

### Power saving

The display is equipped with a power saving system. When left idle for a certain time, the computer connected to the display, will power down the display.

The power saving system can be switched on or off using the on-screen menus.

The power saving system works with the standard Windows power saving and with the DPMS function on the BarcoMed display controller.

### **Tilt & swivel base**

The versatile tilt & swivel foot allows to use the display for viewing portrait or landscape image resolutions.

The user can easily change the panel height and viewing angle, allowing to use the display in the optimal viewing conditions.

## Package contents

### Coronis System package

Each Coronis system contains one or more display boxes (see below) and a *system* accessory box containing the following items:

- Display controller(s)
- CD-ROM with driver and documentation
- MediCal Pro software
- MediCal Pro user manual

### Display box

Each display box includes one display and a *display* accessory box containing the following items:

- Plastic cover of the tilt & swivel foot
- Power supply
- Digital video (DVI) cable (25-pins)
- Analog video (VGA) cable (15-pins)
- USB cable
- Two velcro strips to bind the cables
- European power cord
- American power cord
- Chinese power cord
- This manual

If some of the items are missing, please contact the reseller from whom you have purchased the unit.



## Parts, controls and connectors

### Front

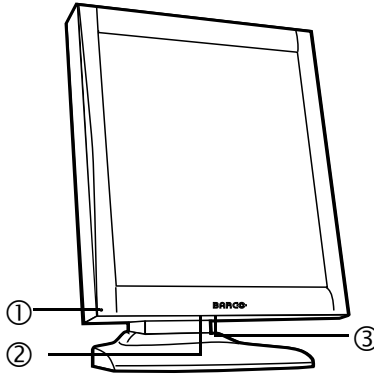


Figure 1: Front side

#### 1. Power LED

The LED is **off** when the display is disconnected from the power. The LED is also off when the LED function is disabled in the on-screen display (OSD).

The LED is **green** when the display is on (when enabled in the on-screen menus).

The LED is **orange** when the display is in Stand-by power-saving mode.

#### 2. USB downstream port. See also item "7." on page 26

#### 3. Control wheel

The control wheel can be pressed like a push button and rotated like a knob.

It allows to put the display in stand-by, navigate through the on-screen display (OSD) menus and change values in the OSD.

## Rear

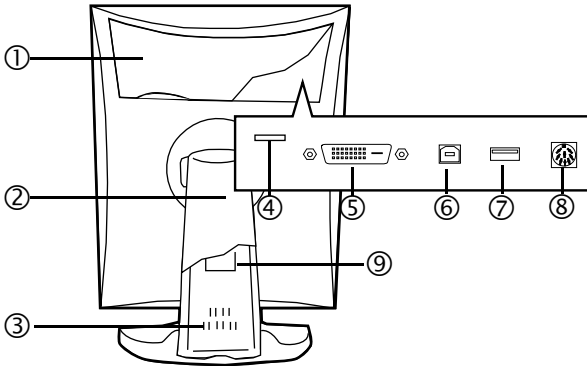


Figure 2: Rear side

**1. Connector compartment cover**

To get access to the connectors, remove the cover by pulling down the 2 clips at the top of the cover.

**2. Tilt & swivel foot cover**

This cover is packed in a separate box when the display is shipped to the customer.

**3. Tilt & swivel foot**

**4. Slot for security cable (e.g., Kensington lock)**

**5. DVI (digital) video input**

**6. USB upstream port**

Connect this connector to the PC USB bus if you wish to connect USB devices to the display's USB downstream port.

**7. USB downstream port**

When the display is connected to the PC USB bus, you can connect USB devices, such as keyboard, mouse, digital camera, to this connector.

**8. DC power input**

Connect the external power supply, delivered with the display, to this connector.

**9. Tilt & swivel foot clip**

The display is shipped with this clip in the foot to protect the tilt & swivel mechanism during transport. After unpacking, you should remove this clip.

Do not throw the clip away! Should the display have to be packed and shipped later, the clip must be applied to the foot again.

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# Display controller installation

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## BARCOMED CORONIS display controller installation



**Caution:** Wear a **grounded**, protective ESD strap during installation or handling of the display controller. Electrostatic charges can damage the display controller.

Prior to installing your BARCOMED CORONIS display controller(s) in your PC please take a few minutes to familiarize yourself with both the display controller and the PCI slots in your computer.

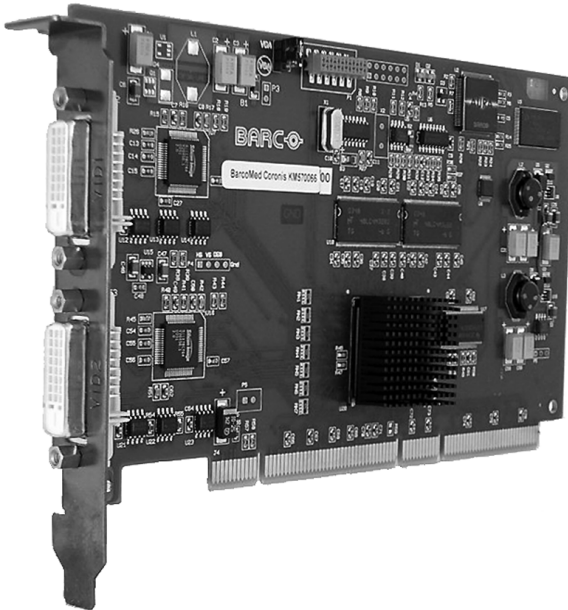


Figure 3: The BarcoMed Coronis PCI display controller

### Jumper location

There is one user changeable jumper on the BarcoMed Coronis. It is used to enable or disable the VGA capabilities of the display controller.

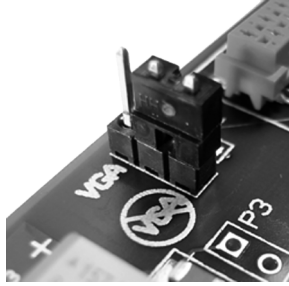


Figure 4: VGA Jumper Enlarged View

### Using the VGA capabilities of the BarcoMed Coronis

Prior to installing the BarcoMed Coronis, decide if you are going to use its on-board VGA capabilities. If you are, check the setting of the Jumper at J-1 on the display controller (see figure 4 VGA Jumper Enlarged View). By default, VGA should be enabled, on the top two pins.



**NOTE:** To use multiple BarcoMed Coronis display controllers in a single host with VGA enabled, you need to enable VGA on only ONE of the BarcoMed Coronis display controllers and disable VGA on ALL other BarcoMed display controllers.

### Examples of PCI slots

Although the BARCOMED CORONIS controller is a 64-bit board, it may be installed in either a 64-bit or 32-bit PCI slot. However, installing it in a 32-bit PCI slot will result in a decrease in performance. Figure 5 illustrates the types of slots so that you can correctly identify which one to use for the BarcoMed Coronis.



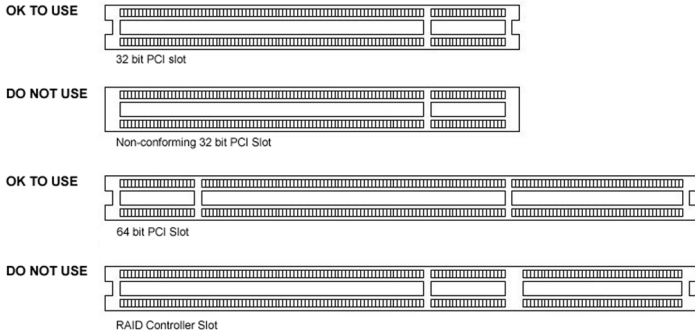


Figure 5: PCI and RAID Controller Slots

Install the BarcoMed Coronis controller in your computer following these steps:

1. Turn off the power to your computer and disconnect the power cord, however make sure that the computer chassis is **still grounded**.
2. Remove the chassis cover according to the manufacturer's instructions. Be sure to observe safety warnings.
3. If you have decided to use the on-board VGA capabilities of the BarcoMed Coronis (see **Using the VGA capabilities of the BarcoMed Coronis** on page 32), you **must now remove** any VGA display controller(s) that are currently installed in the computer or **disable** any VGA controllers that are integrated into your PC's motherboard.
4. Install the BarcoMed Coronis Controller into a free PCI slot, either 64-bit or 32-bit (see figure 5, for examples of slots). Be sure that the display controller is seated firmly in the slot.
5. Secure the card to the chassis with the PC's I/O panel mounting screw, and replace the chassis cover.
6. Connect the primary display (left most display in a linear configuration, top most in a vertical configuration) to the uppermost connector on the BarcoMed Coronis (the output farthest from the motherboard – **"Head 1"** in figure 6) using the provided

DVI cable. For a dual-headed BarcoMed Coronis setup, connect the secondary display to the other connector on the display controller.

7. Replace the chassis cover, reconnect the power cord, turn on the power, and boot the system as usual.

### Running multiple BarcoMed Coronis display controllers in a single host

The physical order of the displays may vary when you are running multiple BarcoMed Coronis display controllers. This is due to the PC's PCI bus control in the system BIOS, and not the BarcoMed display controller. It may become necessary, depending on how your PC's BIOS configures the PCI bus, to switch your DVI display connections to achieve a linear desktop configuration.

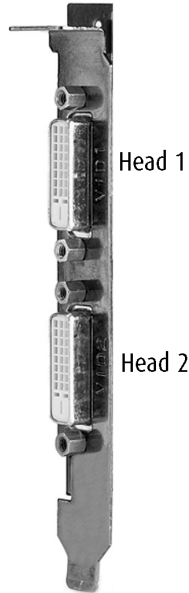


Figure 6: The Video Outputs.

## BarcoMed PCI Express® Controllers

During the first quarter of 2006 Barco Medical Imaging Systems added PCI Express (PCIe) versions of its Coronis and Coronis 5MP display controllers to its grayscale Medical Imaging Display Systems product line. The PCIe versions of these boards will have the same features as the currently shipping PCI version.

All three PCIe boards will feature a x8 logical bus on a x8 physical connector. They have been designed to function in PCI Express x8 or x16 slots. Optimum performance will always be obtained by installing them in a PCIe x8 slot. Depending on your PC manufacturer's implementation of the logic for the PCIe x16 slot optimum performance may also be obtained by installing the Barco PCIe boards in the PCIe x16 slot.

Connecting your Barco displays to your BarcoMed PCIe board is identical to connecting them to a BarcoMed PCI board (please refer to your system manual for details).

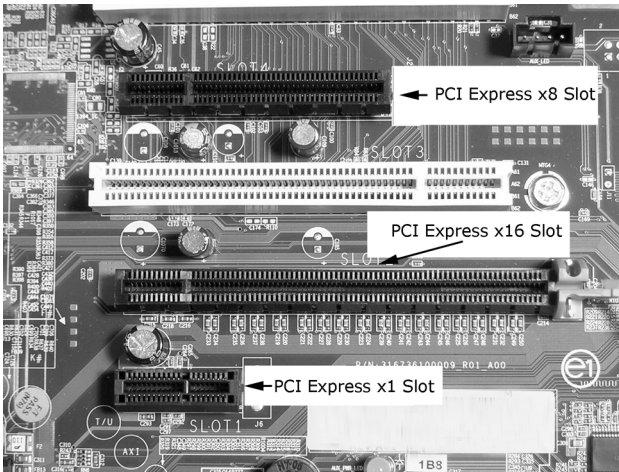


Figure 7: Examples of PCI Express Slots

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# Display installation

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## Installation precautions

### Precautions

- Keep your original packaging. It is designed for this display and is the ideal protection during transport.
- Avoid reflections in the flat panel to reduce eye strain.
- Place the display on a strong and stable table or desk.
- Keep the display away from heat sources and provide enough ventilation around the display.
- Do not use the display in direct sunlight.
- Do not scratch or apply pressure to the LCD panel. This may damage the panel permanently.

## After unpacking the display



### Important:

In the factory, the height-positioning system in the display foot is blocked with a red clip to prevent damage during transportation.

Before installing the display, you must remove this clip.

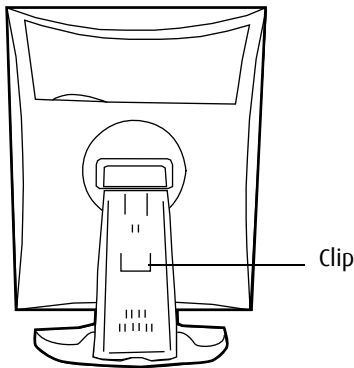


Figure 8

### To remove the clip:

1. Position the display with its rear side facing you.
2. Pull the red clip out of the fixation holes in the foot.
3. Keep the clip in case the display needs to be shipped later.



### Adjust the panel orientation

You can change the orientation of the panel at any time, but it is more convenient to select landscape or portrait orientation before connecting the cables.

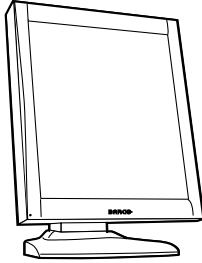


Figure 9:  
Portrait  
orientation

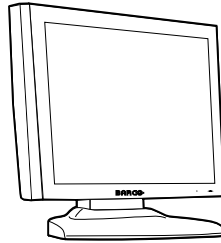


Figure 10:  
Landscape  
orientation

### To change the panel orientation:

1. Stand at the front side of the panel and take the panel at both sides.



- Very important: Tilt the panel before changing the orientation.

Should you change the panel orientation without tilting it first, you might irreversibly damage the tilt & swivel mechanism.

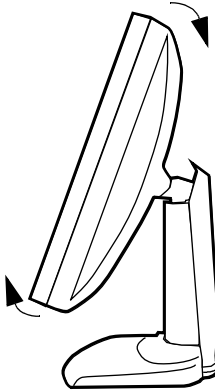


Figure 11: Tilt the panel before rotating

3. To change from portrait to landscape, turn the panel counterclockwise.

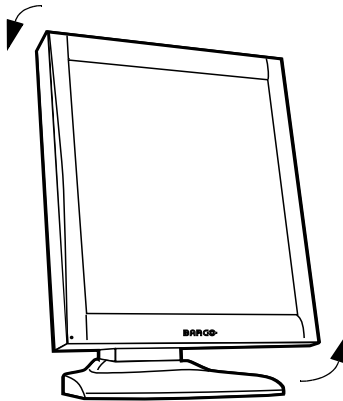


Figure 12: To rotate the panel from portrait to landscape

4. To change from landscape to portrait, turn clockwise.



**Notice:**

If, after installing the display or the system, you change the panel orientation while an image is on the screen, the result depends on your application:

- In a Coronis system, the image orientation will adapt to the new panel orientation automatically after a second.
- If the I-switch software is installed and enabled, the image resolution will also be adapted automatically to the new panel orientation.
- If you use the display stand-alone, the image orientation will not change with the panel orientation.

Only the orientation of the on-screen display (OSD) will change automatically in case "Orientation" in the OSD Geometry menu is set to "Automatic".

To change the orientation of the image, you will have to change the resolution in the Windows Display control panel (if possible).

## Power connection

To connect the power:

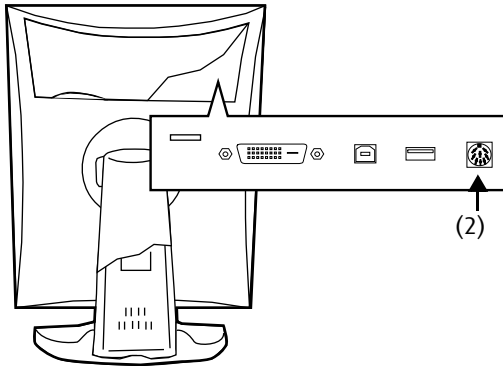


Figure 13

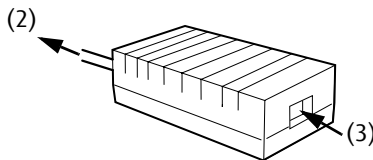


Figure 14

1. To get access to the connectors, remove the connector compartment cover by pulling down the 2 clips at the top of the cover.
2. Connect the output of the 12V DC power supply to the DC input of the display.
3. Connect one end of the proper power cable to the AC input of the 12V DC power supply.
4. Connect the other end of the power cord to a **grounded** power outlet.

## Video connection

### Connecting DVI cables: **One display:**

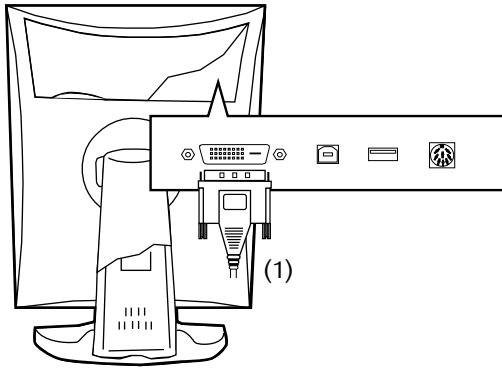


Figure 15

1. Connect one end of the DVI cable to the DVI input of the display.
2. Connect the other end of the DVI cable to the DVI connector of the display controller board. If this board has 2 video heads (2 video outputs), connect to output Vid 1 (Head A).

### Connecting DVI cables: **Two displays:**

1. Connect the left display (when looking at the front side) to display controller output Vid 1 (Head A) as described above.
2. Connect the second display to output Vid 2 (Head B).

## USB connection

The USB connection allows you to use the display as USB hub, to which you can connect USB devices, such as a keyboard, mouse or digital camera.

### To connect the USB cable:

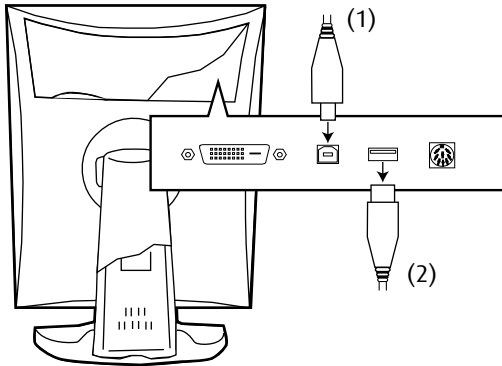


Figure 16

1. Connect a PC USB downstream connector to the display's USB upstream connector by means of a USB cable.
2. Connect any USB device to one of the display's USB downstream connectors.

## Cable routing

### Routing the signal cables

- Bind the cables in the connector compartment together with the cable tie inside the connector compartment.
- Put the connector compartment cover back on the display. Pay attention that the signal cables are positioned under the bulge in the cover.
- Push the cables into the clips on the rear of the tilt & swivel foot.
- Bind the cables together above and under the foot, by means of the 2 velcro strips attached to the inside of the foot cover (packed inside the accessory box).
- At last, put the foot cover back in place.

### To put the foot cover in place:

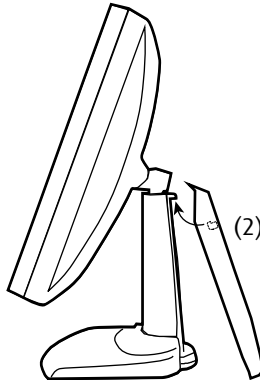


Figure 17:

1. The foot cover is packaged separately in the accessory box. Unpack the foot cover.
2. Push the upper side of the cover onto the foot, so that the hooks inside the cover are positioned right under the bulges at the rear of the foot.

- 3.** Slide the cover upward while moving the lower side of the cover towards the foot.
- 4.** Press the cover to the foot so that it makes a clicking sound.



## Attaching the display to an arm stand

The panel, standard attached to the tilt & swivel foot, is compatible with the VESA 100 mm standard. So it can be used with an arm stand according to the VESA 100 mm standard.

Therefore, the tilt & swivel foot must be removed from the panel.



### Important:

- Use an arm that is approved by VESA (according to the VESA 100 mm standard).
- Use an arm that can support a weight of at least 13 kg (28.66 lbs).

### To attach the display to an arm stand:

1. Put the display face down on a clean and soft surface. Be careful not to damage the panel screen.
2. Remove the tilt & swivel foot cover.
3. Remove the small screw (A) fixing the small plastic cover on top of the foot. Next, remove the small cover itself.

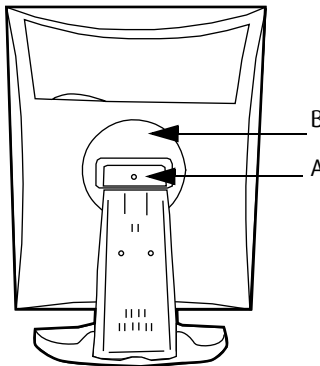


Figure 18: Display with tilt & swivel foot cover removed

4. Unscrew the 2 screws fixing the round plastic cover (B).
5. Lift up the round plastic cover.

6. Remove the four screws fixing the foot while supporting the foot.
7. Attach the arm stand **firmly** to the panel using 4 screws M4 x 8 mm.

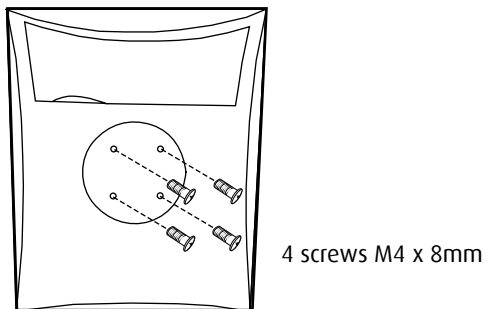


Figure 19

# Display controller software installation

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## Installing the BARCOMED display controller drivers and software



**Note:** The installation dialog will display in English if your operating system's language is not supported.

This process applies to the following versions of Windows:

- Windows 2000 Professional,
- Windows XP Professional,
- Windows Professional x64 Edition,
- Windows Server 2003, and
- Windows Server 2003 x64 Edition.

You will need to install the BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers and software in the following cases:

- After you have installed the display controller(s) for your BARCO MEDICAL IMAGING DISPLAY SYSTEM in your system for the first time.
  - After you have reinstalled or upgraded your operating system.
8. Start your system. When the *Found New Hardware Wizard* comes up, click **Cancel**. When the *System Settings Change* window asks you to restart your computer, click **No**.



**Note:** Both displays connected to a single display controller must have the same physical orientation and resolution in order to be attached to the Windows desktop.

9. Run the Barco Product Installation Wizard.

The Barco Product Installation Wizard should start automatically when you insert the Barco System CD-ROM into your CD drive *after* the operating system has started. If your CD drive's auto-run is not enabled or the Barco Product Installation Wizard does not start automatically, you can run the Barco Product Installation Wizard manually by following these steps:

- a) Click the **Start** button in the task bar.
- b) Click **Run**.

- c) Click **Browse** and browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM and click on the file, **Setup.exe**, and click **Open**.
- d) Click **OK**.

or

- a) Browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM and double click on the file, **Setup.exe**.
10. Click **Next** on the Welcome page.
  11. Click **Next** on the Components to be installed page.
  12. Follow the wizard's on-screen instructions to complete the installation.



**Note:** When the page shown in figure 20 appears you may either click **Next** to accept the default settings or if you know the settings required for your viewing application, you may select them now and then click **Next**. You may change these settings later by using the Barco pages of the *Windows Display Control Panel*.



Figure 20

Please refer to your application manuals for information on the correct Palette and Drawing modes to select.

- 13.** When the driver setup is complete, click the **Finish** button.

The Barco Product Installation Wizard will now guide you through the installation of MediCal QAWeb, MediCal Pro, or NioWatch, BarcoMed SelfExam, and the Barco on-line documentation.

- 14.** When the Setup complete message appears, select **Reboot System Now** and click **Finish**.

### Automated display configuration

Once the drivers, software and documentation have been installed and your system has been rebooted, the *Barco Monitor Plug and Play Software* should automatically detect your Barco displays and attach them to the desktop with the correct resolution. If the *Barco Monitor Plug and Play Software* fails to detect your Barco displays or fails to attach them to the desktop correctly please refer to the section, **Setting the resolution of your CORONIS display** on page 102 in the Troubleshooting section of this manual.

### Reinstalling drivers

You can install new drivers or reinstall existing drivers at any time by using the Barco Set-up wizard on your Barco system CD-ROM, see **Installing the BARCO MED display controller drivers and software** on page 53 of this manual.

### Uninstalling the drivers and software

To un-install the BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers, software or documentation, please use the *Windows Add/Remove Programs* utility. This can be found in the Windows Control Panel.



**Note:** If you installed your BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers with DualView enabled, the wizard may warn you that DualView must be disabled before the drivers can be un-installed. This is normal, please follow the prompts from the wizard.

## Command line (Silent) Install of Drivers and Software

Specifying the silent install option causes most of the GUI associated with the installer to disappear. A background progress window will still be visible, but no user input will be required.

The silent install behavior is dictated by the *SETUP.INI* file. Each application is allowed to have separate command-line parameters for normal and silent installs.

To install the drivers and software silently, please follow the steps below:

1. Insert the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM into your CD/DVD drive. When the Barco Product Installation Wizard starts click "**Cancel**".
2. Click the **Start** button in the task bar.
3. Click **Run**.
4. Click **Browse** and
  - a) browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.
  - b) Click on the file, **Setup.exe**, and click **Open**.

or

- a) Browse to the root directory of the location where you saved the contents of your BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.
  - b) Click on the file, **Setup.exe**, and click **Open**.
5. In the *Open* address window, place your cursor at the end of the line of text that appears and add the following text after *Setup.exe*, a space and *-silent*. Click **OK**.

Example (where D is the name of your CD/DVD drive):

```
D:\Setup.exe -silent
```

See figure 21 for an example of how the command line window should look when using the silent install from the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.



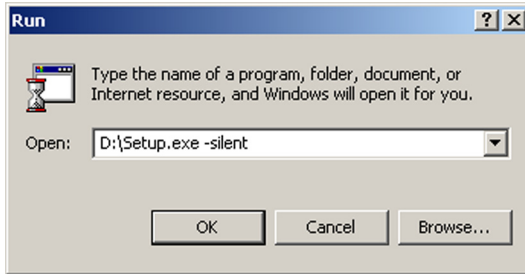
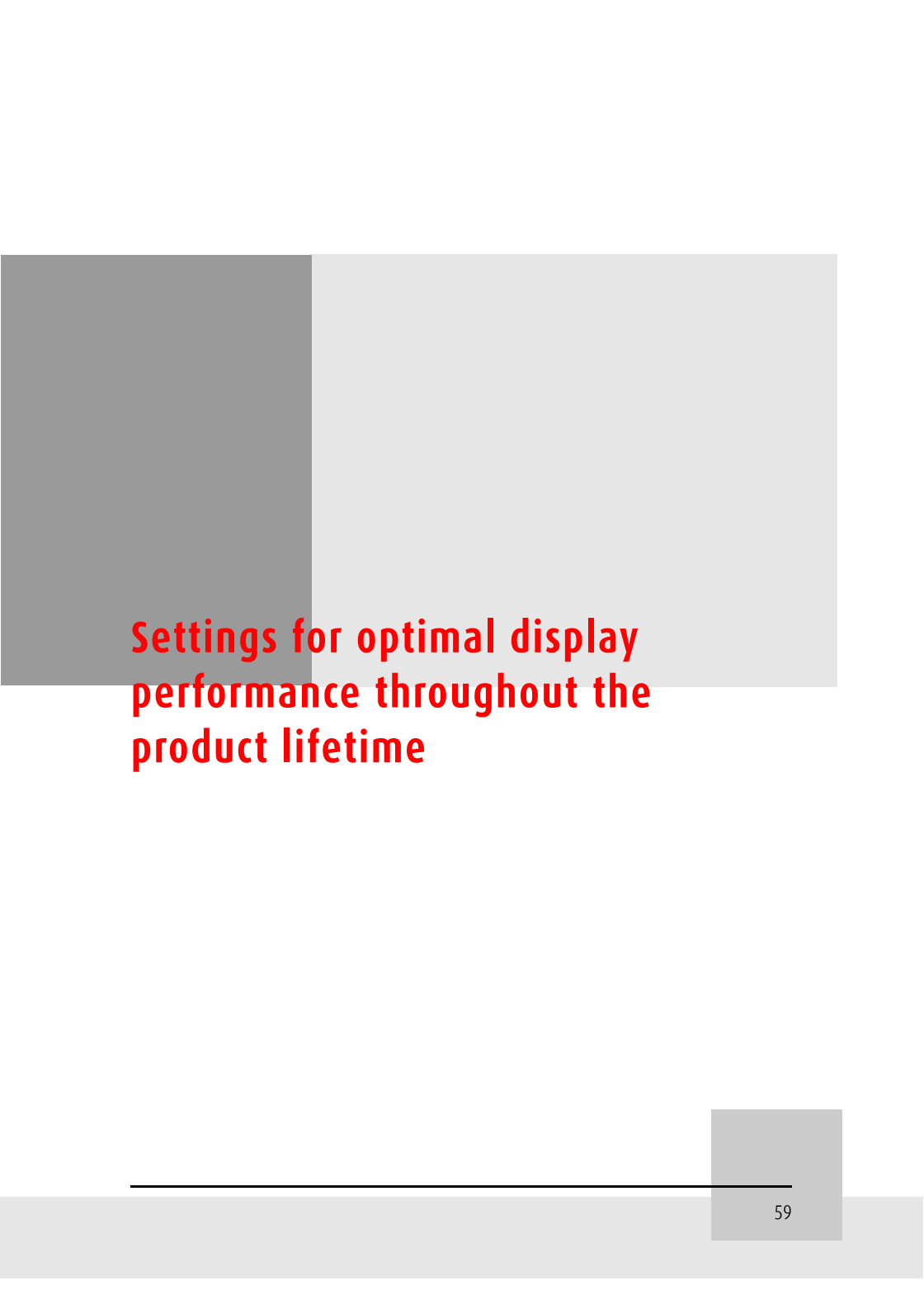


Figure 21

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# Settings for optimal display performance throughout the product lifetime

## Avoiding image retention

Image retention (image sticking, ghost image) is the phenomenon where an image, or a part of it, seems to be 'burnt' in the LCD panel. When you display e.g. a uniform light gray image you distinguish the ghost image in the background.

This phenomenon occurs on all types of LCD panels when a static image remains on the screen for a long time (unfortunately the exact period is not predictable). Also parts of the image that do not change often (e.g., toolbars, buttons, borders) are susceptible to image retention.

Image retention may be undone in some cases, but it may also damage the LCD panel permanently. So it is better to take precautions during product installation to avoid it.

Here are some countermeasures you can take:

### **Power off, power save mode, screen saver**

Very important is to use screen savers and power saving modes as much as possible. If you do not need the display for a few hours, switch it off. If you only need to look at it when you actually do something on the screen, use a screen saver.

The amount of "relaxation" time should be considerable, the more you do it the better. "Flashing" the screen for a few seconds with a screen saver is not sufficient. Image retention is a slow process to build up, but it also disappears slowly.

### **Re-Layout**

In most applications, a display is used to show a layout of several components with borders. Whereas the content in these windows can change continuously, the borders are static images and may cause boundary image retention. The layout of the windows (size, number of windows, etc.) should be changed as much as possible.

**To activate appropriate screen saving, proceed as follows:**

- 1.** In the display OSD menus, open the **Settings** menu and switch **DPMS** on. For more information, please consult the display operation chapter.
- 2.** In Windows, open the **Display** control panel. Open the **Screen Saver** tab.
- 3.** Select a screen saver from the **Screen saver** drop-down box.
- 4.** Set the **Wait** time to 10 minutes.
- 5.** Click the button **Power...** The Power Options Properties dialog opens.
- 6.** In the Turn off monitor drop-down box, select **After 20 mins**.
- 7.** Click **Apply**.
- 8.** Close the control panel.

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# Display controller tools

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## BarcoMed control panel operation

This chapter describes how to configure the displays in your Barco Medical Imaging Display System using the tools available through the *Advanced* button on the *Settings* tab of the *Windows Display Control Panel*.

### Accessing the Barco tab

**Note:** You must have logged on to Windows using an account with administrator privileges in order to use the Barco portions of the “Windows Display Control Panel” to change any display settings.

1. Open the “Windows Display Control Panel” by one of the two methods below:
  - a) Start > Settings > Control Panel > Displayor
  - b) Open the “Display Properties Control Panel” by right clicking in an empty area on the desktop, then select “**Properties**”.
2. Click on the “**Settings**” tab.
3. Select the “**rectangle**” that represents the Barco display whose settings you wish to change.
4. Click on the “**Advanced**” button.
5. Select the “**Barco**” tab from the Properties screen.

### Using the Barco tab

The Barco tab is divided into three sections. The first section provides information about the graphics controller and allows access to the graphics controller advanced configuration pages. The second section provides information about the display. The bottom section allows access to two Barco tools, Barco System Report and Barco’s softcopy QA solution, MediCal QAWeb, MediCal Pro or Niowatch, depending on which solution is installed on your system. Also, there is a active link to the Barco Medical Imaging web site.



Figure 22 Barco Tab

### Barco System Report

The Barco System Report, also known as BarcoMed SelfExam, is a wizard based tool which collects data about the components that are installed in your system. This information is used by the Barco MID Support team when trying to resolve customer issues.

### MediCal QAWeb/MediCal Pro/NioWatch

Clicking on the MediCal QAWeb/MediCal/NioWatch Pro button will launch the softcopy QA application that is installed on your system. Please refer to the MediCal QAWeb, MediCal Pro, or NioWatch manual for information about this application.

## Advanced Properties

To access the advanced properties configuration pages for your Barco display controller(s), click on the **Advanced** button in the Graphics Device Information section.

### BarcoMed advanced configuration

There are two pages accessible from the advanced configuration button. They are:

- Barco Drawing Modes
- Device Details

These two pages replace the following three pages found in earlier versions of the BarcoMed display controller drivers.

- the BarcoMed Driver Tab,
- the BarcoMed Hardware Tab, and
- the BarcoMed Display Tab.

### Barco Drawing Modes

The Barco Drawing Modes page of the Advanced Properties page is divided into four sections: Palette Mode, Drawing Modes, Monitor Configuration, Graphics Board.

#### Palette Mode

In the Palette Mode section you can choose one of the four following Palette Modes. If you are using a color display in conjunction with your Barco grayscale display(s), prior to selecting a palette mode please make certain that you have configured your Windows desktop correctly. (See the section **Setting the resolution of your CORONIS display** on page 102.)

#### Color to Gray Compatibility

Use this palette option for applications, such as Java, which require True Color support. Such applications may not work correctly when using one of Barco's three "Standard 8-bit (256-color)" palette modes. All

applications that are designed to work correctly with 8-bit (256-color) modes should continue to work normally.



**Note:** Dithering is **not** used while in this mode. Also, direct access to the hardware through DirectDraw is **not** allowed in this mode.

#### User Modifiable Color Palette

This option allows applications to modify the palette contents dynamically. This mode reserves the first 10 and last 10 entries in the palette for the Windows operating system, but applications can manipulate the middle 236 entries. This is the standard palette mode as configured by Windows.

#### Static Gray Palette including standard system colors

This option sets the palette to be a static linear set of 236 gray values. The 20 standard system colors are converted from RGB to gray values and are added to the 236 static gray values. Applications are denied the ability to dynamically change or allocate palette entries.

#### Static Gray Palette with NO system colors

This option sets the palette to be a static linear ramp of 256 shades of gray. Applications are denied the ability to dynamically change or allocate palette entries.

#### Drawing Modes

In the Drawing Mode section you can choose from the following Drawing Modes. If any of the options in this section are grayed out, then they are not available for the model controller with which you are working.

#### Enable DirectDraw

This option allows the user to enable or disable DirectDraw. DirectDraw is a software interface that provides direct access to display devices

while maintaining compatibility with the Windows graphics device interface (GDI). DirectDraw is enabled by default.

More information about *DirectDraw* is available through the on-line help.

### Enable Dithering

This option allows the user to enable or disable dithering. Dithering is a technique for increasing the perceived range of colors in an image at the cost of spatial resolution.



**Note:** This option is only available when the *User Modifiable Palette* mode is selected. If either the *Static Gray Palette including Standard System Colors* mode or the *Static Gray Palette with NO System colors* mode is selected, the “Enable Dithering” check box will be grayed-out, and dithering will be automatically disabled.

More information about *Dithering* is available through the on-line help.

### Disable 10-bit grayscale

Use this option for standard Windows®-based applications that require 8-bit color support (256 colors), such as Internet Explorer, Excel, etc.

Do **not** use this option for applications that require 10-bit pixel support (1024 simultaneous shades of gray) and use extended depth graphic libraries such as WinBarco.

### Description of 10-bit grayscale

To show 1024 simultaneous shades of gray all BarcoMed “H” series display controllers, such as the BarcoMed 5MP2FH or BarcoMed Coronis or example, run in extended depth (10-bit) mode by default.

### Implications

When turned on the “Disable 10-bit grayscale” option causes a BarcoMed Coronis display controller to run in 8-bit mode, which results in increased performance since the frame buffer is set to run with 8-bit pixels. While this option may be used with applications that normally require 10-bit support, there will be a loss of pixel depth, i.e. 256 shades of gray instead of 1024 simultaneous shades of gray.

### Disable RGB To Static Gray Color Translation

Select *Disable RGB To Static Gray Color Translation* if you wish to have RGB values equally weighted, with 1/3 each. When not selected, then the International Commission on Illumination (CIE – Commission Internationale de l’Eclairage) model will be adapted, which weights the colors as 59% Green, 30% Red, 11% Blue.

### Monitor Configuration

If the options in this section are grayed out, then they are not available for the model controller with which you are working.

### Graphics Board

There is one option in this section, the *Update Firmware* button. Clicking this button will launch the *BarcoMed Hardware Configuration* utility. This program allows the user to flash update the firmware stored in the ROM of the currently selected BarcoMed display controller. The *BarcoMed Hardware Configuration* utility is implemented in a Wizard format, which guides the user through the flash update procedure. The user will be prompted to select a firmware update file to use for the update process. This file will be provided by Barco Medical Imaging if and when a firmware update is required.

### Device details

The Device Details page provides detailed information about the display controller connected to the active display. This information is useful in debugging issues that may occur when using your Barco Medical Imaging Display System.

# Display operation

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## Display operation

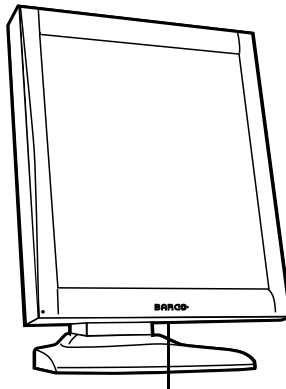
### Operating precautions

Continuous operation of the display with the same image may result in some image sticking on the LCD panel. Over 10 hours operation with the same image content is not recommended.

Switching on DPMS on display and PC and activating a good screen saver may decrease the risk of image sticking (image retention).

### Stand-by switching

When the display is on and no on-screen display is visible, push and hold the control wheel at the front for a few seconds to switch the display in stand-by. The LED turns orange.



Push and hold

Figure 23

When the display is in stand-by, press the control wheel to switch it back on.

## About the On-Screen Display (OSD)

### About the on-screen display

The on-screen display (OSD) has a hierarchical tree structure, with several levels. The top level is the “Main Menu”.

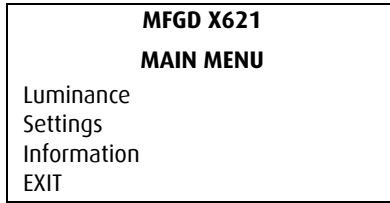


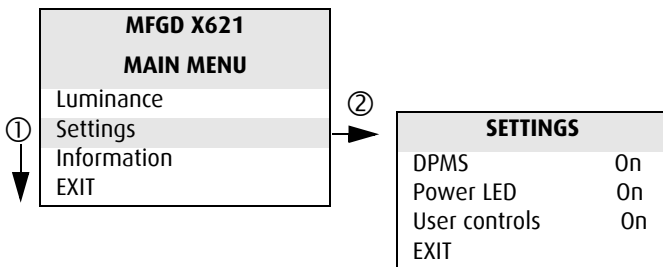
Figure 24: Main menu in standard mode

### How to navigate through the OSD

1. When the OSD is not on the screen, rotate the control wheel to display the OSD.

The main menu appears.

2. To enter into a menu: First, rotate the control wheel to select the desired menu. Next, press the wheel shortly.



1. Rotate the control wheel
2. Press the control wheel

Figure 25: OSD menu navigation

3. To exit from a menu, rotate the control wheel to select EXIT and press the control wheel shortly.

If you exit from the Main Menu, you exit the OSD.

4. To change an adjustment value (e.g., the luminance value), rotate the control wheel to select the adjustment and press the wheel shortly.

The adjustment name appears, as well as the current adjustment value. Rotate the wheel to change the value.

When done, press the wheel shortly to confirm the change and return to the menu.

5. To select a value from a predefined list (e.g., in Settings), rotate the control wheel to select the setting and press the control wheel until the desired value appears.

### Locking and unlocking user controls

The User Controls function allows to disable or enable the control wheel functions.

When user controls are disabled, you cannot:

- display and use the on-screen display
- switch the display in stand-by mode

#### To disable user controls:

1. Rotate the control wheel to display the on-screen display. The Main Menu appears.
2. Rotate the control wheel to select **Settings**.
3. Press the control wheel to enter the Settings menu.

SETTINGS	
DPMS	On
Power LED	On
User Controls	On
EXIT	

Figure 26: Settings menu

4. Rotate the control wheel to select **User Controls**.
5. Press the control wheel to switch from “On” to “Off”.
6. Exit the menus.

**To enable user controls:**

1. Make sure the on-screen display is not on the screen.
2. Do not use the control wheel for at least 3 seconds.
3. Rotate the control wheel 1 step clockwise.
4. Press the control wheel 2 times.
5. Rotate the control wheel 1 step counterclockwise. The on-screen display appears.

**Note:** Steps 2 to 4 must be performed in maximum 3 seconds.

6. Rotate the control wheel to select **Settings**.
7. Press the control wheel to enter the Settings menu.

<b>SETTINGS</b>	
DPMS	On
Power LED	On
User Controls	Off
EXIT	

Figure 27: Settings menu

8. Rotate the control wheel to select **User Controls**.
9. Press the control wheel to switch from “Off” to “On”.
10. Exit the menus.

## Complete OSD overview

### Main menu

Name	Description
Luminance	Adjust the target luminance to which the display will be stabilized.
Settings	Change settings for DPMS, Power LED and User Controls
Information	Read information about the display

### Luminance

Name	Description
Luminance Target	Manually adjust the luminance. The luminance is indicated in cd/m <sup>2</sup> (nit).

Luminance Target adjusts the overall luminance (light output) of the *display*. It does not affect the grayscale of the image on the screen.

### Settings

Name	Description
DPMS	Switch on/off the automatic power saving system (DPMS)
Power LED	Switch the power LED on/off. Note: The LED's orange DPMS state is not influenced by this setting. So, when the display goes into power-saving mode, the LED will turn orange, even if it was switched off by this setting.
User Controls	Disable the control wheel functions

### Information

Name	Description
Product	The display type
Serial No	Indicates the display serial number
SW Version	Displays the current internal software version
Display Lifetime	Indicates the total time the display has been operating, including the time in stand-by
Backlight Lifetime	Indicates the total time the display has been operating, excluding the time in stand-by

# Advanced display operation

## Introduction



### Important

The functions described in this chapter are intended for trained service staff only!

Improper use of these functions may cause the display to not function correctly. Barco cannot be held responsible for the results or damage caused by improper use of these functions.

### About the Advanced functions

The advanced functions are extensions of the standard OSD.

By default, a user browsing through the OSD sees only the standard functions. When logged in in advanced mode, the user sees the standard and advanced functions in the OSD menus.

### To log in as advanced user:

1. Enter the main menu.
2. Rotate the control wheel to select the menu item EXIT.
3. Press and hold the control wheel for a few seconds until the OSD main menu is refreshed on the screen.

You have now logged in as advanced user.

## Advanced functions in the Luminance menu

### Manual Backlight

This function allows to manually control the backlight luminance.

When you control the Manual Backlight function, the Luminance target function and I-Guard control are disabled.



### Important:

Disabling the I-Guard results in an uncalibrated and not stabilized backlight.

After switching the power off and on again, the Luminance target and I-Guard control are activated again. This is also the case when you control the Luminance function again.

## Advanced functions in the Settings menu

### Panel position

Click to select the desired option:

- Auto: Select if the display will be used in both portrait and landscape orientation.
- Portrait: Select if the display is always used in portrait orientation.
- Landscape: Select if the display is always used in landscape orientation

### Auto Rotation

When switched on, the image will be rotated automatically when switching between portrait or landscape orientation.

### DVI Input

Click to switch between normal DVI signal, Dual10 DVI signal or automatic detection of the DVI format.



### DVI Link

Click to switch between single link (Single) and automatic detection of single or dual link (Auto).

### Stabilizer

Click to switch the backlight stabilizer on/off

### Patch

Click to hide/display the I-Guard patch. When you hide the patch, the I-Guard will not function properly anymore



### Important:

Disabling the I-Guard results in an uncalibrated and not stabilized backlight.

### Burn-In Mode

When switched on, the display will generate a white image when the video cable is unplugged

## Advanced functions in the Information menu

### Service

The Service information menu contains the following items:

Name	Description
Display Name	The display type
Display Ser No	Indicates the display serial number
Display Stock No	Indicates the display order number
Panel Ser No	Indicates the flat panel serial number
Panel Prod Date	Indicates the flat panel production date

## Firmware

The Firmware information menu contains the following items:

Name	Description
Boot Code Version	The version of the internal boot code
Run Code Version	The version of the internal run code
CPLD Code Version	The version of the internal CPLD code
Transpose Version	The version of the internal Transpose circuit code

## Runtimes

Runtimes is a submenu from General Information, containing the following items:

Name	Description
Display Lifetime	Indicates the total time the display has been operating, including the time in stand-by
Backlight Lifetime	Indicates the total time the display has been operating, excluding the time in stand-by
Backlight Runtime	Indicates the time the backlight has been on since the last time it was switched off (e.g., in stand-by). This counter stops after 1092 minutes.

### Measurements

Name	Description
Internal Temperature	The temperature measured inside the display
Sensor Temperature	The internal temperature measured on the I-Guard board
FAN speed	A value indicating the speed of the fans. Minimum speed is 0, maximum speed is 1000
Sensor Y value	The luminance measured by the I-Guard, expressed in cd/m <sup>2</sup> (nit)
Sensor Raw value	The luminance measured by the I-Guard, expressed in DAC values

### Scan measurements

Name	Description
DVI Input:	The current DVI input format
DVI Link	The current DVI link setting
Resolution:	The resolution of the current input signal
Clock Frequency:	The current clock frequency
Hor.Total:	The total number of dots, horizontally, of the input signal
Hor.Active:	The number of active dots, horizontally, of the input signal
Hor.Blanking:	The horizontal blanking of the input signal
Hor.Front Porch:	The horizontal front porch of the input signal
Hor.Sync:	The horizontal sync length of the input signal

Name	Description
Hor.Back Porch:	The horizontal back porch of the input signal
Hor.Frequency:	The horizontal frequency of the input signal
Vert.Total:	The total number of lines, vertically, of the input signal
Vert.Active:	The number of active lines, vertically, of the input signal
Vert.Blanking:	The vertical blanking of the input signal
Vert.Front Porch:	The vertical front porch of the input signal
Vert.Sync:	The vertical sync length of the input signal
Vert.Back Porch:	The vertical back porch of the input signal
Vert.Frequency:	The vertical frequency of the input signal

## Advanced functions in the Adjustments menu

In Advanced mode, the main menu contains an additional menu, Adjustments. This menu contains the submenu Miscellaneous.

### Miscellaneous Adjustments

The Miscellaneous adjustments are intended for internal purposes only. Adjusting them will have no result.

The Miscellaneous menu contains the following items:

Name	Description
RS232 Address	Rotate the control wheel to change the internal display address.



# MediCal Pro software

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## MediCal Pro installation and operation

### MediCal Pro software installation

Install MediCal Pro on the PC. Follow the instructions from the MediCal Pro User Guide.

**Important:** Do not forget you have to have Administrator privileges to install or uninstall MediCal Pro.

### Using MediCal Pro

You can now use MediCal Pro to configure the complete configuration and set up the Q/A tasks.

Proceed as follows:

1. Start MediCal Pro. If appropriate, you can connect to MediCal Administrator.
2. Set up the configuration in MediCal Pro by using the Configuration Setup wizard.
3. If necessary, align the displays' geometry settings.
4. For all the displays in the system, check if the DPMS setting is turned on. Therefore, right-click on the display icon and select Properties... from the drop-down menu. Then click on Details...  
Check if the Powersave option is checked. If not, check it. This is necessary to use the DPMS possibilities of the display controller.
5. For all the displays in the system, define (if necessary) and select a Preset.
6. After selecting the Preset, MediCal Pro starts consistency calibration automatically.
7. Define the Q/A task schedule.
8. Run the due tasks.

Please refer to the MediCal Pro User Guide for more information.

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# Cleaning instructions

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## Precautions



### Precautions

- Take care not to damage or scratch the glass or LCD panel.
- Do not apply pressure on the glass or LCD panel.
- Do not apply or spray liquid directly to the glass, panel or cabinet as excess liquid may cause damage to internal electronics. Instead, apply the liquid to the cleaning cloth.
- DO NOT USE:
  - Lye or cleaning solutions containing lye\*
  - Acid
  - Detergents with fluoride
  - Detergents with ammonia
  - Detergents with abrasives
  - Steel wool
  - Sponge with abrasives
  - Cloth with thread made of steel
  - Other coarse tools

\*(Lye is a strong caustic alkaline solution of potassium salts.)

## Front glass

**Proceed as follows:**

- Clean the glass using a soft cotton cloth, lightly moistened with plain water.
- Wipe dry with a dry cloth.

## Cabinet

**Proceed as follows:**

- Clean the cabinet using a soft cotton cloth, lightly moistened with a recognized cleaning product for medical equipment.
- Repeat with water only.
- Wipe dry with a dry cloth.
- The cabinet has been tested for resistance to the following products:

Cidex, Betadine, Alcohol (Isopropyl and Ethyl), Ammonia-based cleaners (Windex) and Aquasonic Gel.

## LCD panel

It may be possible that dust particles have entered the display and are stuck behind the front glass.



We recommend to let this cleaning procedure be done in a BARCO service center. **The product warranty expires when the user removes the glass panel or otherwise opens the display.**

However, when really necessary, you can perform the cleaning on site if you can work in dust-free conditions. This is to avoid more dust entering the display when opening it.

### To remove the glass panel:



Figure 28

1. Switch off the display.
2. Tilt the panel.
3. Unscrew the 4 sunken screws at the rear, fixing the glass panel and bezel (28).
4. Carefully take the glass panel a few centimeter from the display. It is still connected to the rest of the display by means of the LED connection.
5. Unplug the LED connection (29).



Figure 29

### To clean the LCD panel:



- Take care not to touch the I-guard light sensor on the LCD panel.
- Dust particles on the LCD panel may be blown away by using a dust remover. E.g., DUST OFF 67 (KONTAKT Chemie).

A dust remover is composed of a blend of compressed liquid gases functioning as propellant. They provide a jet of dry inert gas that acts like compressed air for a quick and safe removal of dust particles and other dry contaminants on the surface of the lcd panel or the glass panel.

**Attention:** The dust remover contains a liquid gas. If you shake the can or move the can too fast while spraying, you may blow drops of liquid on the panel surface!

If this is the case, clean the panel as described below.

- If the LCD panel is dirty or wet, clean the panel using a lint-free, nonabrasive cloth, lightly moistened with a solution of 25% Isopropyl Alcohol (IPA) and 75% de-ionized or distilled water. E.g.: Cleareen, a product of Certified Laboratories. In case you do not dispose of these products, use plain water instead.
- Take another clean, dry, soft, lint-free cloth and gently wipe the glass dry.

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# Troubleshooting

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## General tips

- If one display from a multi-head system exhibits problems, try to eliminate the problem by switching video cables or power supplies. In that way you can find out if the problem resides in the display or not.

### Problems and solutions

Problem description	Possible tests or solutions
Screen remains black	<ul style="list-style-type: none"><li>• Please check the installation procedure in this manual</li><li>• If the LED at the front is orange, the display is in stand-by</li><li>• Check in the Windows Display Properties if the display controller video heads are attached. If not, there will be no image on the screen.</li><li>• The external power supply may be defective</li><li>•</li></ul>
Image exhibits noise or interference	<ul style="list-style-type: none"><li>• The video cable may be of poor quality</li><li>• DVI video cable may not be firmly connected to the PC or to the display</li></ul>
Image contains missing pixels	<ul style="list-style-type: none"><li>• A number of missing pixels may be normal (inherent in LCD technology)</li></ul>
Image contains not enough grayscales	<ul style="list-style-type: none"><li>• You may have installed the driver software with an inappropriate selection of Palette Settings (Static Gray with or without System Colors). Install the driver software again using a different setting for Palette Settings.</li></ul>
The PC does not start up	<ul style="list-style-type: none"><li>• Check the CMOS settings in the PC BIOS</li><li>• The display controller may not be firmly seated in the PCI / AGP connector</li></ul>

Problem description	Possible tests or solutions
No image during PC start-up	<ul style="list-style-type: none"><li>• Check the VGA jumper settings on the display controller</li><li>• Check the CMOS settings in the PC BIOS</li></ul>
Nothing happens when you press or rotate the control wheel	<ul style="list-style-type: none"><li>• The User Controls may be disabled. Please read the paragraph about the "User Controls" function.</li></ul>
The image is non-proportionally spread out over the screen	<ul style="list-style-type: none"><li>• Select another resolution in the Windows "Display Properties" control panel</li></ul>
The image on the screen is rotated 90°	<ul style="list-style-type: none"><li>• Select another resolution in the Windows "Display Properties" control panel</li></ul>
The previous image remains slightly visible on the screen	<ul style="list-style-type: none"><li>• This phenomenon, called "image sticking" is normal if the same image has been on the screen for a long time. The ghost image will disappear after some time. Over 10 hours operation with the same image content is not recommended. Switching on the display DPMS may decrease the risk of image sticking.</li><li>• A slight case of image sticking can be solved by continuously displaying a full white image during a number of hours.</li></ul>
On a dual-head system, the images on the left and right display seem to be switched	<ul style="list-style-type: none"><li>• Switch the video cables at the display controller or at the display video inputs</li></ul>

## Setting the resolution of your CORONIS display



**Note:** In order to set the resolution of your CORONIS you must be logged in using an account with administrator privileges.

1. Open the “*Windows Display Control Panel*” by one of the two methods below:
  - a) Start > Settings > Control Panel > Displayor
  - b) Open the “*Display Properties Control Panel*” by right clicking in an empty area on the desktop, then select “**Properties**”.
2. Click on the “**Settings**” tab.
3. Select the **rectangle** that represents the Barco Coronis display whose settings you wish to change.



**Note:** If you are using the VGA capabilities of your BARCOMED CORONIS display controller, the resolution for the first display may be set to a VGA resolution of “640 x 480” pixels with 16 colors and a default refresh rate. If your BarcoMed Coronis controller is not running VGA, the display may not be enabled yet. To enable the display, check the “Extend my Windows desktop onto this monitor” **checkbox**, but do **NOT** click the “**Apply**” button at this time.

If you installed your BARCO CORONIS Display System drivers in *SingleView* mode (default for Windows 2000) there will be one rectangle for the virtual display representing the two heads controlled by each BarcoMed Coronis display controller.

If you installed your BARCO CORONIS Display System drivers in *DualView* mode (default for Windows XP) there will be a rectangle representing each head controlled by each BarcoMed Coronis display controller. This will be true even if you have only one display connected to your BarcoMed Coronis controller. Both displays of a display controller cannot be enabled at the same time unless their display properties match. If necessary detach the second display of the BarcoMed Coronis display controller you are

working with by right clicking on the **rectangle** that represents it, deselect **“Attached”** and click the **“Apply”** button.



**Note:** Since Windows will not let you detach the primary display connected to a particular controller, you may need to temporarily make another display the primary display

4. For the display which is still attached click Click on the **“Advanced”** Button.
5. Select the **“Adapter”** tab and then click on the **“List All Modes”** button. Select the resolution and refresh rate that your Coronis display supports from the dialog box and click **“OK”**.



**Note:** In the Adapter box, the Adapter string shows if this display is the First View or the Second View attached to the display controller. Please make a note of this, so that you can arrange the displays in the correct order later if necessary.

6. Click **“OK”** on the bottom of the Adapter Control Panel. If the **“OK”** button on the bottom of the Adapter Control Panel is not visible, press the **“TAB”** key once and then press **“CTRL”+“Enter”** to select **“OK”**.
7. Click **“OK”** in the “Windows will now apply your new desktop settings” dialog box. Your Coronis display should now synchronize and display the Windows desktop.
8. Click **“Yes”** when asked, “Your desktop has been reconfigured. Do you want to keep these settings?”

To set the resolution of the second display attached to the BarcoMed display controller you are working with, go back to the **“Settings”** tab of the **“Display Properties Control Panel”**. If necessary attach the second display you detached in step 2 above, by right clicking on the rectangle that represents it and selecting **“Attached”**.

Now repeat steps 5-8 above for this display.

If you are using a Quad-Head Configuration repeat all of the above steps for the two displays on the second display controller.



**Note:** If you have a single display configuration and you have enabled DualView, Windows will not allow you to attach the second head. This is normal and not a bug.

After enabling DualView and setting the resolutions in a Quad-Head Configuration you may need to drag the heads into the proper position in the window on the “Settings” tab, so that the arrangement in the window on the “Settings” tab matches the physical arrangement of your configuration.



# Technical Information

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## Technical specifications

MFGD 2621:

Item	Specification
Picture panel	21.3-inch diagonal viewable screen TFT (thin film transistor) active matrix, gray-scale liquid crystal display
Resolution	Native: 1600 x 1200
Display area (H x V)	432 x 324 (mm)
Viewing angle (@ 10/1 contrast)	Vertical: 170° Horizontal: 170°
Pixel Pitch	0.27 mm (H) x 0.27 mm (V)
Native color resolution	8 bits / sub-pixel
Luminance	500 cd/m <sup>2</sup> (calibrated)
Contrast ratio	700/1 (typical in dark environment)
Response time	17.5 ms typical (@ 25° C after 30 min warm-up)
Controls	Push / turn control wheel for stand-by switching and OSD controls
Input connectors	DVI dual channel
Signal systems	DVI Digital Sync on DVI: Complying to DVI Rev 1.0 specifications
Input signals	Possible resolutions: • 640 x 480 @ 60, 75, 85, 100 Hz • 1600 x 1200 @ 59, 60 Hz • 1200 x 1600 @ 59 Hz

<b>Item</b>	<b>Specification</b>
Power source	Input for 12 VDC power supply unit: 90 ~ 264 VAC Input for display: 12 VDC. (The supplied 12VDC power supply must be used)
Power consumption	64 watts (max., at 90 VAC, maximum back-light, USB load)
Dimensions (W x H x D)	In perpendicular vertical position, highest position, tilt = 0°, swivel = 0°: 385 x 585 x 250 mm
Net weight	13.9 kg
Operating Temperature	0°C to 40°C, 15°C to 35°C within specs
Storage Temperature	-20°C to 60°C
Humidity	8% - 80% (non-condensing) for operation 5% - 95% (non-condensing) for storage
Altitude	7500 m storage 3000 m operation

MFGD 3621:

<b>Item</b>	<b>Specification</b>
Picture panel	21.3-inch diagonal viewable screen TFT (thin film transistor) active matrix, gray-scale liquid crystal display
Resolution	Native: 2048 x 1536
Display area (H x V)	433.2 x 324.9 (mm)
Viewing angle (@ 10/1 contrast)	Vertical: 170° Horizontal: 170°
Pixel Pitch	0.2115 mm (H) x 0.2115 mm (V)

Item	Specification
Native color resolution	8 bits / sub-pixel
Luminance	500 cd/m <sup>2</sup> (calibrated)
Contrast ratio	700/1 (typical in dark environment)
Response time	17.5 ms typical (@ 25° C after 30 min warm-up)
Controls	Push / turn control wheel for stand-by switching and OSD controls
Input connectors	DVI dual channel
Signal systems	DVI Digital Sync on DVI: Complying to DVI Rev 1.0 specifications
Input signals	Possible resolutions: • 640 x 480 @ 60, 75, 85, 100 Hz • 2048 x 1536 @ 60 Hz
Power source	Input for 12 VDC power supply unit: 90 ~ 264 VAC Input for display: 12 VDC. (The supplied 12VDC power supply must be used)
Power consumption	66 watts (max., at 90 VAC, maximum back-light, USB load)
Dimensions (W x H x D)	In perpendicular vertical position, highest position, tilt = 0°, swivel = 0°: 385 x 585 x 250 mm
Net weight	14 kg
Operating Temperature	0°C to 40°C, 15°C to 35°C within specs
Storage Temperature	-20°C to 60°C
Humidity	8% - 80% (non-condensing) for operation 5% - 95% (non-condensing) for storage

## Technical specifications

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<b>Item</b>	<b>Specification</b>
Altitude	7500 m storage 3000 m operation

## Connector pin assignments

### DVI connector:

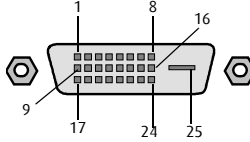


Figure 30: DVI connector pin layout

Pin no.	Signal	Pin no.	Signal
1	TMDS DATA 2-	14	+5V POWER
2	TMDS DATA 2+	15	GND
3	GND	16	HOT PLUG DETECT
4	NC	17	TMDS DATA 0-
5	NC	18	TMDS DATA 0+
6	DDC CLOCK	19	GND
7	DDC DATA	20	NC
8	NC	21	NC
9	TMDS DATA 1-	22	GND
10	TMDS DATA 1+	23	TMDS CLOCK-
11	GND	24	TMDS CLOCK+
12	NC	25	GND
13	NC		

## Glossary

### Calibration

Each display is calibrated in the factory before it is sent to the customer. After this calibration, black and white luminance are set to the ideal level.

A stabilization routine, constantly active when the display is on, keeps these levels constant using the built-in sensor.

### Display Controller head

A display controller (graphics board) converts the digital data from the computer into digital or analog video voltages.

Most of the common display controllers contain just one set of video and sync outputs. However, some high-end boards, like some of the BarcoMed boards, contain two sets of video and sync outputs. This is called a dual head display controller. It is like two complete display controllers implemented on one single unit.

A dual head board in the computer behaves exactly as if two separate boards were installed.

### DICOM

DICOM stands for Digital Imaging and Communications in Medicine. It is a standard developed by the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA).

The standard specifies how digital image data can be moved from system to system.

In addition, Supplement 28 Part 14 specifies a function that relates pixel values to displayed Luminance levels and is called Grayscale Standard Display Function.



# Warranty Statement

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**ARTICLE 1: SERVICES**

BarcoView warrants that the equipment will be free of defects in workmanship or material for the warranty period.

Notwithstanding the provisions of clause 2, repair and replacement of defects in material and/or workmanship under this warranty shall be accomplished in our works in the following manner:

1.1 The Customer, upon the occurrence of any equipment failure, shall contact BarcoView Customer Support Center (or an authorized service center) by telephone, fax or e-mail and shall provide the applicable Customer Support person with a complete description of the problem being encountered, including the model and serial number of the equipment in which the problem has arisen.

1.2 The Customer Support person shall diagnose the problem experienced by the Customer and shall advise the Customer on how to proceed. Customer Support may ask to return the faulty equipment or faulty subassemblies to the BarcoView Customer Support Center (or an authorized service center) for repair activities. The Customer shall ask for a RMA or RAN number to a BarcoView Customer Support Center (or an authorized service center).

1.3 The Customer shall return, freight prepaid, the defective equipment or subassemblies for repair to the BarcoView Customer Support Center (or an authorized service center).

1.4 Replacement parts used shall be new or equivalent to new parts for the revision level of the equipment. The warranty period for the replacement parts will expire at the same moment as the original warranty period of the equipment. All parts replaced hereunder and returned to BarcoView (or an authorized service center) shall become the property of BarcoView (or the authorized service center).

1.5 The repaired equipment shall be returned to the Customer, by regular freight, at BarcoView's charge.

**ARTICLE 2: ITEMS EXCLUDED FROM WARRANTY**

The warranty described herein shall not include the following:

- 2.1 Any hardware or software item procured from a source other than BarcoView or their official agent or distributor and integrated by Customer or a third party into BarcoView supplied equipment.
- 2.2 Any host configuration not explicitly supported by BarcoView.
- 2.3 All software installed on the system, whether they are acquired from BarcoView or third party. An exception is made for software delivered by BarcoView that would prove to be a cause for the malfunctioning of the hardware covered under this Agreement.
- 2.4 Normal wear and tear, use under circumstances exceeding specifications, abuse, unauthorized repair or alternation, lack of proper maintenance.
- 2.5 Any failures resulting from an accident, negligence (such as but not limited to removing or deleting system files & licensed software product files), misuse, circuit failure or any change, damage due to fire, water, thunder or lightning, power failure or fluctuation, disruption of communication lines or due to force majeure, or any reason foreign to the equipment.
- 2.6 Any specific services or procedures, asked for by Customer, related to verification of repaired equipment.

**ARTICLE 3: OBLIGATIONS OF THE CUSTOMER**

Customer hereby assumes the following obligations as partial consideration for BarcoView performance of its requirements under the warranty condition; failure by Customer to meet its obligations under this paragraph shall excuse BarcoView's performance hereunder:

- 3.1 Customer shall not expose BarcoView personnel to any unsafe working conditions.
- 3.2 Repairs to equipment under warranty resulting from improper maintenance or repair performed by the Customer, or its officers,

agents, employees, or representatives, shall be borne by the Customer at its additional cost and expense.

3.3 The customer is responsible for installing the BarcoView equipment in an environment for which it was intended. If there is an indication that the equipment was used - even temporary - outside its specifications, BarcoView is entitled not to perform warranty repairs and terminate the warranty agreement. Any actions that have been taken by BarcoView in this respect, may be invoiced to the Customer at normal pricing.

**ARTICLE 4: MODIFICATIONS OR CHANGES TO THE EQUIPMENT**

Customer may make additions to the equipment only with explicit written consent of BarcoView.

Any attempt to do so, voids the warranty.

**ARTICLE 5: DISCLAIMER OF WARRANTIES**

Barcoveview disclaims all warranties, expressed or implied, including all implied warranties of merchantability and fitness for a particular purpose.

**ARTICLE 6: LIMITATION OF LIABILITY**

Barcoveview shall not under any circumstances be liable to customer or any third party for direct, indirect, incidental, special or consequential damages, such as but not limited to, damage to or loss of tangible or intangible property or equipment, loss of profits or revenues, cost of capital, cost of purchase of replacement goods, or claims of customers of user for service interruptions. The liability of BarcoView for manufacturing, sale, delivery, resale, installation, operation or suitability for use of any products or services covered by or furnished under this warranty condition, whether arising out of contract, negligence, strict tort, warranty or otherwise, shall not exceed the price of the item or items of goods or services upon which such liability is based.

**ARTICLE 7: FORCE MAJEURE**

Either party shall be released from performance of its obligations under this agreement to the extent, and for so long as, the performance of

this agreement is impeded by reason of force majeure. For the purposes of this clause the expression “force majeure” means, but shall not be limited to, industrial dispute, fire, mobilization, requisition, embargo, currency transfer prohibitions, insurrection, lack of means of transport, restrictions of the use of energy, and generally any circumstances which are beyond the control of the parties and hinder performance by one party of his obligations.

**ARTICLE 8: GENERAL**

8.1 Customer acknowledges its understanding that all software and electronic devices, including BarcoView products are subject to possible error, mechanical or electrical failure, and should not be relied upon in inappropriate applications or without proper backup and/or other safety precautions whenever personal injury or property damage may result from failure or error of the product.

8.2 BarcoView shall not be responsible for machine failure and/or its failure to render service or maintenance due to causes beyond its reasonable control.

**B4100519-03**

**March 2007**

**[www.barco.com](http://www.barco.com)**